

23d, 24th, 26th, 28th, 29th; Missouri valley, Huron, Dak., 29th; Middle Slope, 2d, 25th, 29th; Southern Slope, Ft. Davis, Tex., 20th; Rio Grande valley, 5th, 7th; Northern Plateau, Umatilla, 1st; North Pacific coast region, Portland, 3d.

*Mirage*.—Indianola, 14th to 18th, 22d to 29th. Grand Haven, 20th, having the appearance of a city on the opposite side of the lake, outlines very distinct; the roofs of houses and church steeples were plainly discernable; phenomenon lasted about fifteen minutes. New Haven, 8th, 16th, 17th, on Faulkner's Island; spars and rigging of passing vessels towered to an unusual height.

### MISCELLANEOUS PHENOMENA.

*Polar Bands*.—Portland, Or., 5th, 6th, 8th; New Corydon, Ind., 1st, 4th, 10th, 15th, 16th, 23d, 24th; Clinton, Ia., 17th; Fayette, Miss., 12th, 17th, 24th; Clear Creek, Neb., 3d, 23d; Freehold, N. J., 14th, 25th; Albany, N. H., 4th.

*Meteors*.—Campo, Cal., 1st, 11th, Los Angeles; 23d, 8 p. m., seemingly about half the size of the full moon; passed slowly across the sky from SE. to SW., and bursted into a thousand brilliant particles resembling the explosion of a huge rocket. The sky was brightly illuminated during its passage. Boise City, 10th, 15th, 26th. Yuma, 24th, 26th. Fort Cummings, 22d. Deadwood, 13th, very brilliant. Fort Shaw, 5th. Fort Keogh, 5th. Fort Assinaboine, 11th. Uvalde, 28th. Huron, Dak., 18th. Davenport, 13th, 14th, 21st, 22d, 23d. Buffalo, 9th. Columbus, 11th, 14th. Life Saving Station No. 6, N. C., 2d, 8th, 11th. New London, 10th, 11th. Fort Union, N. M., 26th. Princeton, Cal., 6th, very large and brilliant. Rio Vista, Cal., 9th, 19th, illuminating the heavens like a flash of lightning. Anna, Ill., 21st. Charleston, Ill., 12th, 15th, 17th, 18th, 25th, 28th. Swanwick, Ill., 4th, 5th, 6th, 16th, 28th. New Corydon, Ind., 5th. Vevay, Ind., 1st, 3d, 10th. Monticello, Ia., 1st, 20th. Muscatine, Ia., 24th. Topeka, Kan., 6th, 7th, 14th, 20th. Point Pleasant, La., 12th, 14th, 16th, 24th. Woodstock, Md., 8th, 24th, 25th, 26th. Rowe, Mass., 16th, 22d. Fall River, Mass., 11th, 22d. Fayette, Miss., 2d, 3d, 10th. Clear Creek, Neb., 1st. Genoa, Neb., 16th, 17th. Freehold, N. J., 11th, 14th. Vineland, N. J., 9th. Waterburg, N. Y., 22d. Ellsworth, N. C., 13th. Jacksonburgh, O., 9th to 15th, 30th. Wooster, O., 9th. Fallsington, Pa., 6th. Statesburg, S. C., 2d, 3d, 6th, 8th, 10th, 11th, 12th, 15th, 17th, 20th, 22d, 23d, 24th, 29th, 30th, 31st. Austin, Tenn., 14th, 16th, 28th. Beloit, Wis., 4th, 11th, 21st, 28th.

*Prairie and Forest Fires*.—From Flint to Port Huron, Mich., 31st, fires raging in fields, forests and swamps; in nearly every section of the state more or less damage has been done; along the lake shore north of Fort Gratiot the smoke was almost stifling, and in Port Huron for the past three days it has been so thick as to seriously interfere with business. Independence, Kan., 13th to 31st, raged with great fierceness. Fayette, Miss., 29th. Freehold, N. J., 21st to 31st; air filled with smoke for many miles. Atco, N. J., 26th, very extensive. Carson City, Nev., 13th to 16th. New Corydon, Ind., 22d, 23d. Fort Missoula, Mont., 21st to 24th. Dayton, Wash. Ter., 19th, 25th. Salt Lake City, 3d, in mountains southeast of city. Fort Custer, 18th to 28th. Fort Keogh, 10th to 24th. Fort Assinaboine, 22d to 28th. Superior City, Mont., 19th to 22d. Fort Gibson, 13th to 29th. Fort Griffin, 20th. Stockton, 25th, 26th, 27th. Fort Sill, 27th. Jacksboro, 22d to 28th. Clarksville, Tenn., 12th, heavy fires along the south side of the Cumberland river; large loss to fences, timber and crops. Petoskey, Mich., 4th, woods along the C. and G. T. R. R. burning fearfully; city filled with offensive smoke. West Branch, Mich., 5th, forests on fire along the line of the Mackinaw division of the Michigan Central R. R.; 3,000 telegraph poles and 8,000 fence posts burned; all railroad communication cut off and thousands of dollars' worth of standing timber destroyed. Tuscola county, Mich., 11th, the damage by fires will reach many thousands of dollars; timber and fences met with wholesale destruction; in several instances farm buildings were destroyed, entailing heavy loss; in the northern townships several lives were lost. Emmet, Mich., 31st, heavy fires raging without abatement; farmers obliged to leave work and fight for the preservation of their homes. Pana, Ill., 31st, grass and fencing destroyed, incurring a large loss. Tuscola, Ill., 31st, extensive, loss to grain stacks and fencing, \$3,000. Province of Ontario, Can., 31st, bush fires widely prevalent and causing great damage. Bay City, Mich., 5th, raging about the city in every direction; for a hundred miles to the north, fences, buildings and timber destroyed in vast quantities; railroad travel stopped; city enveloped in dense smoke and the air filled with burned leaves and ashes. Clinton Co., Ohio, 31st, much fencing and many hay and grain stacks destroyed. Eagle Pass, 19th. Brackettville, 26th. Little Rock, 17th. Escanaba, 1st. Oswego, 31st, very numerous. Morgantown, 28th, dense smoke from forest fires.

**Earthquakes.**—Santa Barbara, Cal., 30th, 7 p. m., two slight shocks; course of movement north to south; no destruction. Umatilla, Or., 9th, a volcanic eruption took place from the side of a mountain situated south of the South Fork of Clearwater river, about 20 miles east of Mt. Idaho, and a column of fire and smoke was thrown upwards to a height of several hundred feet.

**Sunsets.**—The characteristics of the sky at sunset as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 181 stations show 5,585 observations to have been made, of which 29 were reported doubtful; of the remainder, 5,556, or 85.0 per cent., were followed by the expected weather.

**Sun Spots.**—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent, Nautical Almanac Office, Washington, D. C.:

DATE— August, 1881.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
2, 7 a. m. ....	3	10	2	15	3	10	8	40†	
3, 8 a. m. ....	0	0	0	5	0	0	8	38†	
4, 8 a. m. ....	0	0	2	8	0	0	5	25†	
5, 5 p. m. ....	0	0	2	6	0	0	3	19	
6, 8 a. m. ....	0	6	0	0	0	0	3	25	
8, 7 a. m. ....	1	1	0	0	0	0	4	26	
9, 7 a. m. ....	0	0	0	0	0	0	3	20	
10, 8 a. m. ....	0	0	0	0	0	0	3	20	
11, 8 a. m. ....	1	7	0	0	0	0	4	15	
12, 8 a. m. ....	0	0	1	4	0	0	2	8	
13, 9 a. m. ....	0	0	1	5	0	0	1	3	
14, 9 a. m. ....	0	0	0	0	0	0	0	0	
15, 9 a. m. ....	0	0	0	0	0	0	0	0	
16, 7 a. m. ....	0	0	0	0	0	0	0	0	
17, 8 a. m. ....	1	8	0	0	0	0	1	8	
21, 10 a. m. ....	1	6	.....	.....	.....	.....	1	6	
22, 7 a. m. ....	1	4	0	0	0	0	2	10	
23, 9 a. m. ....	1	25†	0	0	0	0	3	25†	
24, 3 p. m. ....	0	15	0	0	0	0	2	60†	
25, 7 a. m. ....	0	10	0	0	0	0	2	60†	
27, 8 a. m. ....	1	20	0	0	0	0	3	80†	Many of the spots small.
28, 8 a. m. ....	0	30†	0	0	0	0	3	110†	Many of the spots small.
29, 8 a. m. ....	3	10†	0	0	2	5	6	120†	

†Approximated.

Faculae were seen at the time of every observation.

Mr. D. Trowbridge, at Waterburg, N. Y., reports as follows: 2d, 2 groups, 5 spots, 1 group near east margin appeared by rotation, faculae in west; 3d, 2 groups, (same as observed on 2d,) 3 spots; 4th, 3 groups, 8 spots, one new faint group, 4 spots near east margin; 5th, 2 groups, 3 spots, 1 group disappeared by rotation; 6th, 2 groups, (same as observed on 5th,) 6 spots; 8th, 2 groups, (same as observed on 6th,) 5 spots; 10th, 2 groups, (same as observed on 8th,) 4 spots; 11th, 3 groups, 5 spots, 2 faint groups, new one gone out; 12th, 2 groups, 2 spots; 13th to 16th, none visible; 17th, 1 group, 2 spots north of middle of disk appeared since morning of 16th; 18th, 1 group, (same as observed on 17th,) 2 spots, somewhat brighter; 19th, 1 group, (same as observed on 18th,) 1 spot; 20th, 2 groups, 1 new, appeared by rotation, 2 spots; 23d, 2 groups, 7 spots, one fine new group, 5 spots, appeared by rotation; 24th, 2 groups, (same as observed on 23d,) 9 spots; 26th, 5 groups, 16 spots, one of the groups observed on the 24th, has divided into 3, or 2 new groups have appeared; 1 faint spot near middle of disk has appeared since 24th; 27th, 5 groups, 17 spots, 1 group appeared by rotation; 28th, 4 groups, 16 spots, some changes since 24th; 29th, 4 groups, 15 spots, 1 new group, appeared by rotation; 30th, 7 groups, 2 of them new, 25 spots, 1 has appeared and 1 disappeared by rotation; 31st, 7 groups, 20 spots. Mr. H. D. Govey, at North Lewisburg, Ohio, reports; sun spots were observed every day during the month, except on the 14th and 15th. The largest were seen on the 1st and 3d; they were most numerous from 25th to 31st.

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